

IMMATURE STAGES AND LIFE CYCLES OF FIVE SPECIES OF *OZOPHORA*
UHLER (HEMIPTERA: RHYPAROCHROMIDAE: OZOPHORINI)
ASSOCIATED WITH FIGS IN MEXICO

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Abstract.—Descriptions and illustrations of adult and immature stages of *Ozophora atropictoides* Slater and Baranowsky, *O. baranowskii* Slater and O'Donnell, *O. concava* Distant, *O. consanguinea* Distant, and *O. maculata* Slater and O'Donnell are presented. Biology, duration of life cycle, and host plants are mentioned for each species. A key for fifth instar nymphs is included. These species seem to be feeding only on fig seeds. They occupy different micro-habitats so it seems that there is no competition for their feeding resource. *Ozophora consanguinea* is the only arboreal species, although it can also be found near the base of the trunk. *Ozophora concava* is mainly found near the base of the trunk. *Ozophora atropictoides*, *O. baranowskii*, and *O. maculata* are all terrestrial species and are found mainly on the leaf litter around fig trees. *Ozophora baranowskii* is usually the most abundant species, and *O. atropictoides* and *O. maculata* are present when *O. baranowskii* is absent or is found in low numbers.

Key Words: *Ozophora*, *Ficus*, Lygaeoidea, Mexico, Rhyparochromidae

The genus *Ozophora* Uhler, is one of the most diverse lygaeoid genera in the tropics. It is known only from the Western Hemisphere. Slater and Baranowski published numerous papers on this genus. Slater (1983) described 13 new species from Panama. Baranowski (1987) described a new species, *O. slateri*, from Costa Rica, including descriptions of immature instars, and mentioned that this species was found in leaf litter of *Ficus* spp. Slater (1986) suggested that this genus is very diverse in the Neotropics and mentioned that the Mexican fauna will be large but is still unknown; he described two new species; *Ozophora vazquezae* from Mexico, Honduras, and Guatemala, and *O. nana* from Quintana Roo, Mexico. Slater (1988) studied the species of Ozophorini from western United States and Baja California. Probably the most impor-

tant work is by Slater (1995), who described 15 new species of *Ozophora* from Central and South America, and included a key to the known species from the Neotropical mainland. Rodriguez (1997) studied the natural history of *O. baranowskii*, and *O. maculata* in Costa Rica, and mentioned that they were found on *Ficus padifolia* HBK.

Of the 94 species described, there are only descriptions of immature stages for 14 species, with just a few illustrations. Furthermore, most of the species described have been collected only using black light. Slater and Baranowski (1978) named a new species of bromeliad lygaeid, *Ozophora hohenbergia*, including all nymphal instars; Slater and Baranowski (1979) described nymphs of three new species of *Ozophora* from Jamaica, *O. josephina* associated with

figs and *O. hirsuta* and *O. longirostris*. Slater and O'Donnell (1979) in their analysis of the *O. laticephala* complex, described four nymphal instars of *O. laticephala*. In the revision of *Ozophora* of Florida, Slater and Baranowski (1983), described nymphs of several species, *O. burmeisteri*, *O. divaricata*, *O. gilva*, *O. picturata*, and *O. trinotata*; Baranowski (1987) described the instars of *O. slateri*, from Costa Rica, and Slater (1987) described the nymphs of *O. agilis*, *O. quinque maculata subtilis*, and *O. umbrosa*. Only illustrations for fifth instar nymphs of *O. josephina* and *O. laticephala*, have been made. Only Slater and Baranowski (1983) presented a key to the nymphs of six species found in Florida. None of the species included in this key are subject of the present study.

Although it is well known that several species of *Ozophora* are associated with figs, there are records for only 12 species feeding on *Ficus* spp. and almost nothing is known about their immature stages and their biology.

In this study we include the descriptions and illustrations of all stages in the life cycle of *Ozophora atropictoides*, *O. baranowskii*, *O. concava*, *O. consanguinea*, and *O. maculata*. Host plants and most of the biological information were obtained from two reserves in the state of Veracruz, Mexico, although we also include information from a study of the lygaeid fauna associated with figs in other states on the Gulf Coast of Mexico. We also provide a key to fifth instar nymphs of these five species

MATERIALS AND METHODS

Biological information was obtained mainly from two biological research stations. Estacion Biologica La Mancha is situated at sea level on the coast of Veracruz, 30 km NE of Ciudad Cardel (96°22'40"W, 19°35'23"N); Estacion Biologica Los Tuxtlas (94°40'W, and 18°00'N), varies from sea level to around 400 m in elevation, and it is also situated in the state of Veracruz, but 150 km south. The type of vegetation

in the first area is mainly medium tropical dry forest, and Los Tuxtlas is dominated by high tropical rain forest.

In these two areas, around 200 fig trees that produced fruit at different times were sampled, with visits made every month during 2001 and 2002. The ground area covered by the crown of each tree, including leaf litter, buttresses, and aerial roots, was checked. Top parts of each tree were searched by climbing the tree with the use of ropes, or by free-hand using their aerial root systems. Bugs were collected by using an aspirator or by cutting small branches bearing fruits. Insects were kept alive and put into plastic containers (9 × 8 cm) covered with muslin cloth to avoid condensation. A dry fig leaf and an opened fruit were put in each container as well as a small damp cotton ball; these were changed every three days. Containers were checked daily for the presence of eggs. Individuals were kept under laboratory conditions at about 20° C and 70% RH. Individuals fixed in 70% alcohol were used for illustrations and descriptions; measurements are given in mm ± 1DS.

Voucher specimens have been deposited at the following collections: Coleccion Entomologica del Instituto de Ecologia, A.C. Xalapa, Veracruz, Mexico (IEXA), Coleccion Nacional de Insectos, Universidad Nacional Autonoma de Mexico (CNIN), and The Natural History Museum, London (NHM).

RESULTS

Ozophora atropictoides Slater and Baranowski (Figs. 1A–G)

Egg.—Elongated, with posterior end slightly narrow and anterior end slightly flattened. Length, 0.91 ± 0.01 mm; width, 0.36 ± 0.06 mm. Yellow white when laid, turning reddish later. Corium with a ornamental pattern with elevated, spots distributed mainly on anterior pole. Operculum with three to four micropylar processes.

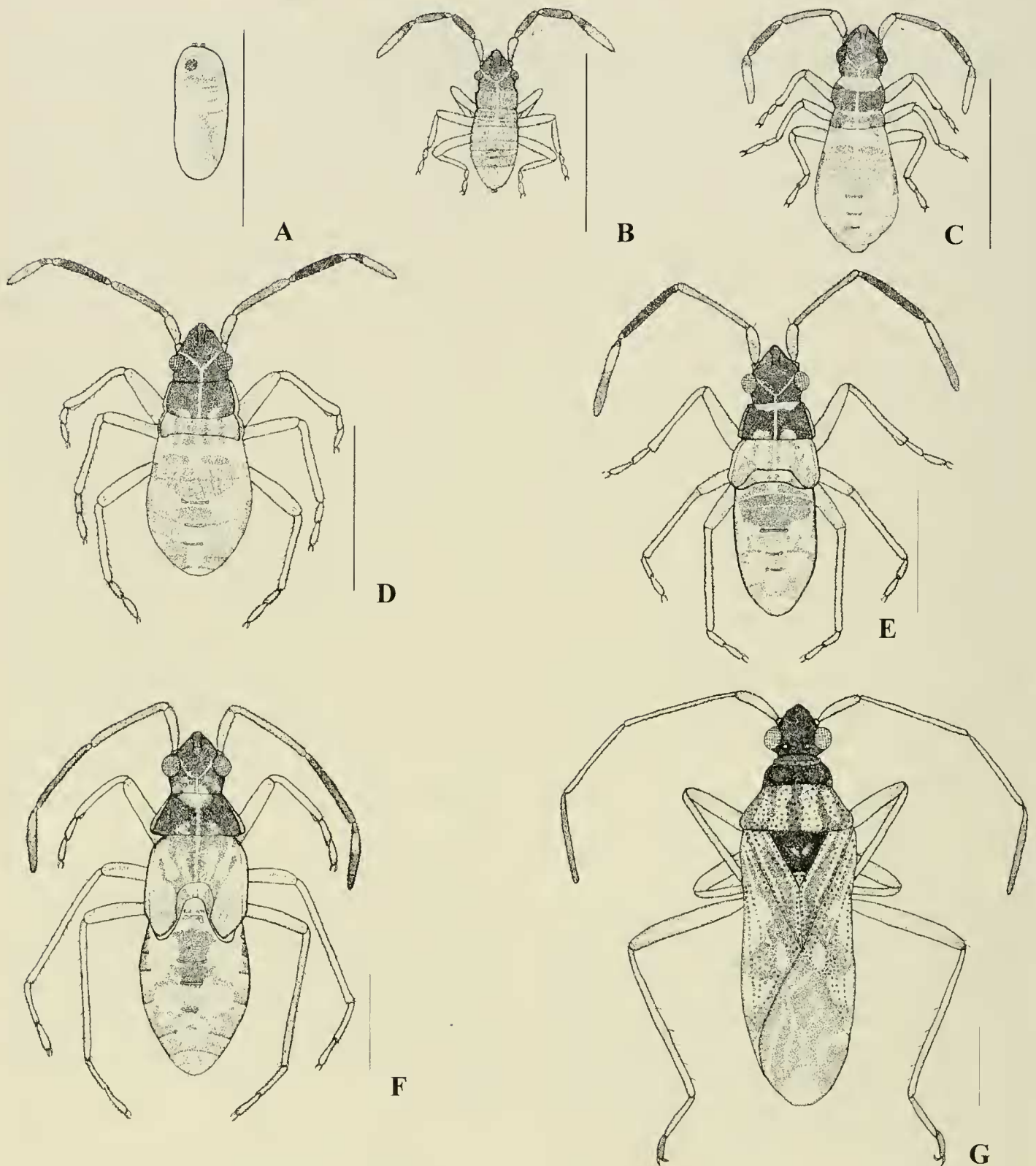


Fig. 1. *Ozophora atropictoides*. A, Egg, lateral view. B, First instar. C, Second instar. D, Third instar. E, Fourth instar. F, Fifth instar. G, Adult.

First instar.—Body long, antenna slightly longer than body length. Head, pronotum, mesonotum, antennal segments II and III, and labial segment I, brown. Eyes red; antennal segments I and IV yellow white with bases brown, union between antennal segments III–IV reddish; labial segments III and IV, and legs pale yellow. Metanotum

and thoracic pleura pale brown with a mesial yellow area. Abdominal segments I to III pale yellow; rest of abdomen red with small pale yellow areas. Dorsal and ventral surface of body with erect hairs, more abundant on abdominal venter. Labium reaching base of abdominal sternite II. Scent gland openings not apparent. *Mea-*

measurements ($n = 10$): Body length 1.11 ± 0.15 ; head length 0.31 ± 0.06 ; width across eyes 0.32 ± 0.01 ; interocular distance 0.21 ± 0.01 ; postocular distance 0.08 ± 0.02 ; antennal segments: I 0.16 ± 0.01 , II 0.24 ± 0.02 , III 0.25 ± 0.0 , IV 0.4 ± 0 ; labial segments: I 0.22 ± 0 , II 0.15 ± 0 , III 0.17 ± 0 , IV 0.16 ± 0.01 ; pronotum length 0.12 ± 0 , width across humeral angles 0.27 ± 0 , width across anterior margin 0.27 ± 0 ; hind leg: femur length 0.32 ± 0 ; tibia length 0.37 ± 0 ; tarsus length: I 0.13 ± 0.02 , II 0.17 ± 0 .

Second instar.—Slightly pyriform, antenna less than body length. Head and pronotum dark brown, eyes reddish-brown. Antennal segment I and legs grayish yellow. Mesonotum brown with a pale yellow area on each side of middle line near posterior margin. Metanotum mostly pale yellow, except some brown semi-triangular maculae near lateral margin. Abdominal segment I pale brown with mesial area pale yellow. Abdominal segment II and anterior half of segment III pale brown. Rest of abdomen pale yellow, except for some pale brown elongate maculae situated on lateral margins and some semi-rectangular maculae situated mesially on segments IV and V. Scent gland openings III–IV brown with border of openings dark brown, openings of segments IV–V and V–VI faintly apparent and reduced to a small pale brown band. Eyes prominent, labium reaching metacoxae; other characteristics as in first instar. *Measurements* ($n = 3$): Body length 1.16 ± 0.14 ; head length 0.34 ± 0.03 ; width across eyes 0.42 ± 0 ; interocular distance 0.26 ± 0.01 ; postocular distance 0.08 ± 0.07 ; antennal segments: I 0.18 ± 0.02 , II 0.37 ± 0 , III 0.37 ± 0 , IV 0.47 ± 0 ; labial segments: I 0.28 ± 0.03 , II 0.26 ± 0.01 , III 0.22 ± 0.01 , IV 0.2 ± 0.0 ; pronotum length 0.17 ± 0 , width across humeral angles 0.36 ± 0.01 , width across anterior margin 0.32 ± 0.03 ; hind leg: femur length 0.46 ± 0.01 ; tibia length 0.55 ± 0 ; tarsus length: I 0.17 ± 0 , II 0.18 ± 0.03 .

Third instar.—Pyriform, with maximum

width across abdominal segment III. Head dark brown; eyes reddish-brown, antennal segments I and II pale brown with distal ends yellow white; segment III dark brown; segment IV with a white annulus near base, base and distal half brown. Pronotum brown with lateral emarginated margins pale brown, middle line and two small maculae situated near posterior margin pale yellow. Meso- and metanota pale yellow with pale brown spots near lateral margins, near middle line, and some others situated between them. Femora and tibiae pale brown, femora with distal ends slightly paler, tarsi grayish yellow. Abdomen similar to second instar, although scent gland openings more apparent. Abdominal venter pale yellow, with some maculae pale brown situated generally close to lateral margins. Fore femur with a row of spines on internal margin. Other characteristics as in second instar. *Measurements* ($n = 10$): Body length 2.4 ± 0.28 ; head length 0.51 ± 0.01 , width across eyes 0.56 ± 0.05 ; interocular distance 0.32 ± 0.03 ; postocular distance 0.1 ± 0 ; antennal segments: I 0.31 ± 0.08 , II 0.62 ± 0.14 , III 0.58 ± 0.09 , IV 0.62 ± 0 ; labial segments: I 0.46 ± 0.01 , II 0.4 ± 0.07 , III 0.37 ± 0.01 , IV 0.22 ± 0.03 ; pronotum length 0.32 ± 0.07 , width across humeral angles 0.6 ± 0 , width across anterior margin 0.43 ± 0.02 ; hind leg: femur length 0.82 ± 0.17 ; tibia length 0.96 ± 0.2 ; tarsi length: I 0.27 ± 0.07 , II 0.25 ± 0.07 .

Fourth instar.—Elongate, with antenna longer than body length. Head as in third instar. Pronotum dark brown with semicircular pale yellow macula on anterior and posterior margins and on each side of middle line. Most of meso- and metanota pale yellow, except for pale brown bands on each side of middle line and apex of wing pads also pale brown. Abdominal segments I to III dark brown, sometimes with a pale yellow area on mesial region of segment I. Union between connexivum and abdominal segments red. Abdominal sternites II, III, anterior half of IV, posterior half of VI, VII, and VIII brown; rest of abdominal venter

pale yellow. Labium reaching metacoxae. Lateral margins of pro- and mesonota emarginated and with serrated margins. Mesothoracic wing pads almost covering metanotum. *Measurements* ($n = 3$): Body length 3.05 ± 0.49 ; head length 0.7 ± 0.07 , width across eyes 0.73 ± 0.05 ; interocular distance 0.38 ± 0.05 ; postocular distance 0.07 ± 0 ; antennal segments: I 0.46 ± 0.05 , II 0.95 ± 0.15 , III 0.9 ± 0.14 , IV 0.99 ± 0.25 ; labial segments: I 0.47 ± 0.03 , II 0.41 ± 0.08 , III 0.34 ± 0.03 , IV 0.3 ± 0 ; pronotum length 0.45 ± 0.07 , width across humeral angles 0.77 ± 0 , width across anterior margin 0.53 ± 0.09 ; hind leg: femur length 1.16 ± 0.19 ; tibia length 1.45 ± 0.35 ; tarsus length: I 0.4 ± 0.07 , II 0.25 ± 0 .

Fifth instar.—Elongate, maximum width across abdominal segment III, apex of abdomen slightly pointed. Very similar to fourth instar, although femora and tarsi more yellow and red areas of abdomen almost always not visible; in general meso-, and metanota and abdomen becoming lighter. Meso- and metathoracic wing pads reach over anterior half of abdominal segment III. Spines of fore femur more evident and numerous (between 5 or 6). *Measurements* ($n = 10$): Body length 3.9 ± 0.42 ; head length 0.68 ± 0.03 , width across eyes 0.74 ± 0.03 ; interocular distance 0.4 ± 0.03 ; postocular distance 0.2 ± 0 ; antennal segments: I 0.46 ± 0.05 , II 1.05 ± 0.1 , III 0.98 ± 0.1 , IV 1.05 ± 0.07 ; labial segments: I 0.48 ± 0.02 , II 0.55 ± 0 , III 0.37 ± 0 , IV 0.3 ± 0 ; pronotum length 0.48 ± 0.02 , width across humeral angles 0.78 ± 0.04 , width across anterior margin 0.52 ± 0.14 ; scutellum length 0.84 ± 0.05 , width 0.54 ± 0.1 ; hind leg: femur length 1.29 ± 0.05 , tibia length 1.52 ± 0.1 , tarsus length: I 0.46 ± 0.12 , II 0.27 ± 0.1 .

Adult.—Head and anterior pronotal lobe dark reddish brown. Anterior and lateral margins of pronotum, and posterior pronotal lobe pale yellow. Scutellum brown, with two yellow maculae near distal third not reaching base of scutellum. Hemelytron pale yellow, with a dark brown macula sit-

uated between radial vein and anterior margin at level of claval commissure, a second macula at apex of corium, membrane smoky. Legs and antennal segments I and II pale yellow. Antennal segment III yellow, but distal end dark brown, antennal segment IV with a conspicuous subbasal white annulus. Dark brown punctures very small and disperse. Body almost glabrous dorsally. Head slightly declivent. Eyes large, sessile, occupying most of lateral surface of head. Lateral margins of pronotum carinated; calli granulated. Lateral margins of corium concave at midpoint. Metathoracic scent gland short, bending slightly posteriorly, evaporative area occupying two thirds of metapleuron. Fore femur armed with three large spines and 4–5 smaller and thinner spines. Labium reaching metacoxae.

Male: Measurements ($n = 10$): Body length 5.15 ± 0.92 ; head length 0.8 ± 0.07 , width across eyes 0.87 ± 0.1 ; interocular distance 0.38 ± 0.09 ; interocellar distance 0.21 ± 0.02 ; postocular distance 0.08 ± 0.02 ; antennal segments: I 0.62 ± 0.1 , II 1.6 ± 0.14 , III 1.32 ± 0.1 , IV 1.14 ± 0.2 ; labial segments: I 0.7 ± 0.28 , II 0.7 ± 0.2 , III 0.68 ± 0.37 , IV 0.35 ± 0.07 ; pronotum length 0.92 ± 0.17 , width across humeral angles 1.5 ± 0 , width across anterior margin 0.66 ± 0.15 ; scutellum length 0.78 ± 0.25 , width 0.75 ± 0.14 ; hind leg: femur length 2 ± 0.28 , tibia length 2.25 ± 0.35 , tarsus length: I 0.62 ± 0.03 , II 0.3 ± 0 ; III 0.4 ± 0 .

Female: Measurements ($n = 10$): Body length 5.98 ± 0.25 ; head length 0.77 ± 0.03 , width across eyes 0.88 ± 0.04 ; interocular distance 0.38 ± 0.02 ; interocellar distance 0.25 ± 0 ; postocular distance 0.08 ± 0.02 ; antennal segments: I 0.55 ± 0 , II 1.45 ± 0 , III 1.22 ± 0.03 , IV 1.2 ± 0 ; labial segments: I 0.5 ± 0.07 , II 0.59 ± 0.05 , III 0.41 ± 0.01 , IV 0.31 ± 0.01 ; pronotum length 0.87 ± 0.02 , width across humeral angles 1.29 ± 0.02 , width across anterior margin 0.6 ± 0 ; scutellum length 0.7 ± 0.07 , width 0.76 ± 0.05 ; hind leg: femur length 1.72 ± 0.03 , tibia length $2.05 \pm$

0.07, tarsus length: I 0.62 ± 0.05 , II 0.3 ± 0 ; III 0.35 ± 0 .

Biology.—Adults of this species were found only in the area of Los Tuxtlas, and were common on herbs that grow below the crown of *Ficus insipida* Willd., *F. maxima* Mill, and *F. yoponensis* Desv. Nymphs were more commonly found in the leaf litter. Most of the time, adults and nymphs run solitary and were found associated with *O. baranowskii*. The life cycle took around 65 days. The eggs were white when laid, then changed to amber and finally after 9 days became reddish when first instar nymphs appeared. The second instar also took 9 days to develop and 11 days later molted to the third instar; the fourth instar emerged only after 7 days, and during this stage nymphs were more active; the fifth instar appeared 15 days later, and they became adults after 14 days. Nymphs of fifth instar and adults were very active.

Ozophora baranowskii

Slater and O'Donnell

(Figs. 2A–G)

Egg.—Oval, elongated, posterior pole slightly narrowed and pointed, anterior pole rounded; length 0.8 ± 0.04 mm, width 0.31 ± 0.02 mm. Operculum with four small micropylar processes at middle; corium covered by small ornamental patterns without any arrangement. After four days, eyes appear as red spots, and antennae and margins of abdomen also show as red markings.

First instar.—Elongated, with maximum width across mesonotum. Head and pronotum grayish yellow. Eyes bright red. Antennal segments I to III pale brown with their proximal and distal ends yellow white, segment IV with base white, basal half pale brown and distal half yellow white. Labial segment I pale brown, rest grayish yellow. Meso-, and metanota, and thoracic pleura dark brown; mesopleuron sometimes with a small red band near junction of mesonotum. Legs grayish yellow. Abdominal segments I to half of IV, and segments VI to IX yellow, variegated with light bright red spots.

Antennal segment I smallest, II and III similar in size, and segment IV longest. Tylus longer than juga; labium exceeding metacoxae. Dorsal surface of body covered with long hairs, more abundant near middle line. Abdominal venter with some hairs on middle line. Scent gland openings just visible on segments IV–V. **Measurements** ($n = 10$): Body length 0.91 ± 0.04 ; head length 0.24 ± 0.01 , width across eyes 0.33 ± 0.01 ; interocular distance 0.2 ± 0.01 ; postocular distance 0.02 ± 0.008 ; antennal segments: I 0.09 ± 0.02 , II 0.14 ± 0.02 , III 0.16 ± 0.01 , IV 0.2 ± 0.03 ; labial segments: I 0.18 ± 0.01 , II 0.15 ± 0.01 , III 0.15 ± 0.01 , IV 0.15 ± 0.02 ; pronotum length 0.14 ± 0.01 , width across humeral angles 0.33 ± 0.1 , width across anterior margin 0.28 ± 0.01 ; hind leg: femur length 0.2 ± 0.01 , tibia length 0.3 ± 0.01 , tarsus length: I 0.08 ± 0.11 , II 0.11 ± 0.01 .

Second instar.—Slightly pyriform, maximum width across abdominal segment IV. Head, pro- and mesonotum pale brown with middle line and suture yellow. Eyes red. Antennal segments I to III as in first instar, although segment IV with distal half also pale brown. Metanotum mostly yellow, except a small brown band near base. Propleuron sometimes surrounded by a red line. Abdominal dorsum variegated with irregular red and yellow areas, forming bands on segments II and III. A rectangular gray macula on middle area of segments II and III. Scent gland openings visible between segments III–IV, IV–V, and V–VI, as small brown areas which decrease in size from one on segments III–IV, to one on segments V–VI. Abdominal venter yellow. Long setae covering body disappear, only very small setae present. **Measurements** ($n = 10$): Body length 1.68 ± 0.15 ; head length 0.35 ± 0.02 , width across eyes 0.4 ± 0.03 ; interocular distance 0.27 ± 0.02 ; postocular distance 0.06 ± 0.06 ; antennal segments: I 0.13 ± 0.02 , II 0.24 ± 0.03 , III 0.26 ± 0.02 , IV 0.36 ± 0.03 ; labial segments: I 0.25 ± 0.03 , II 0.24 ± 0.02 , III 0.18 ± 0.01 , IV 0.17 ± 0.01 ; pronotum length 0.19

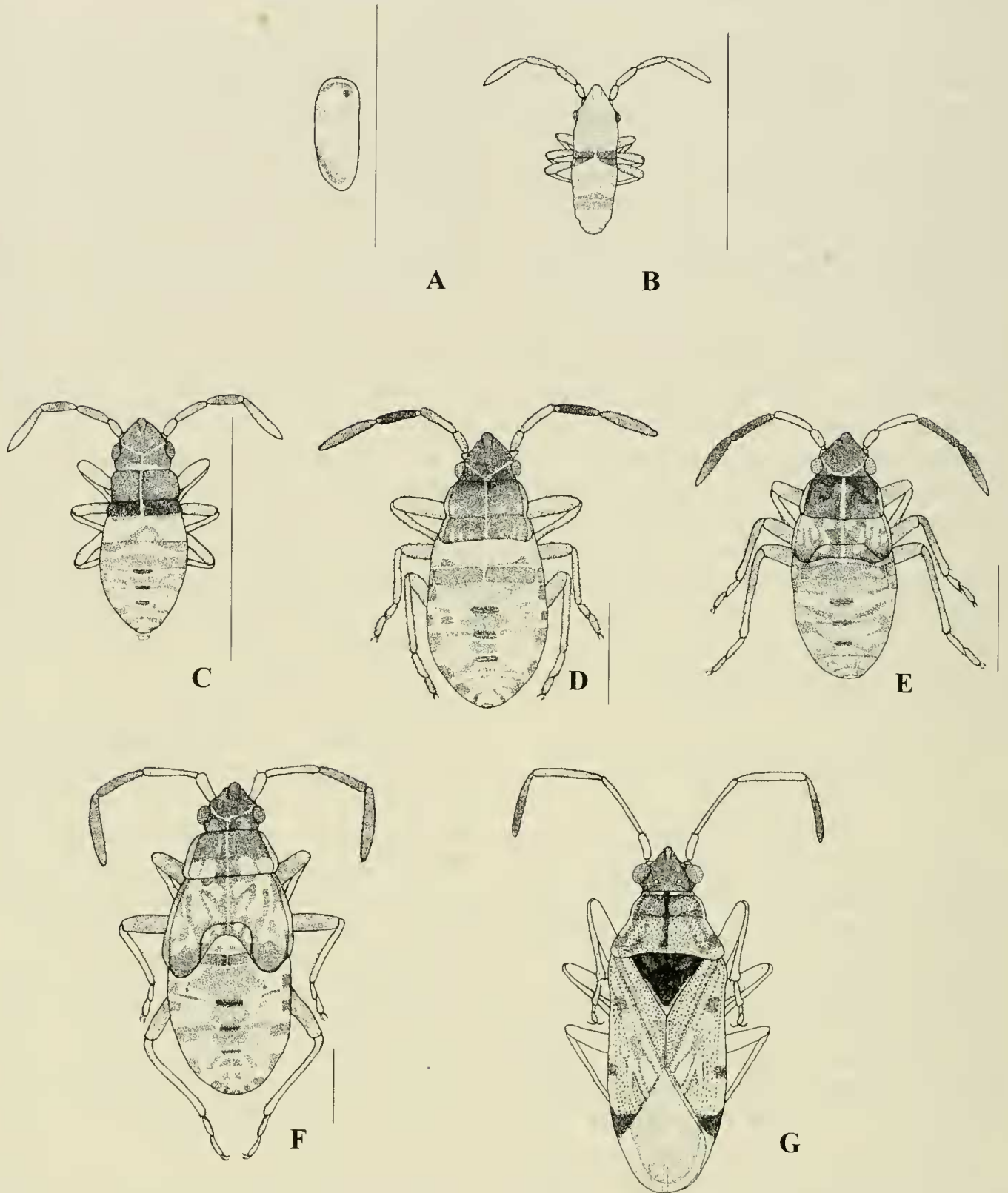


Fig. 2. *Ozophora baranowskii*. A, Egg, lateral view. B, First instar. C, Second instar. D, Third instar. E, Fourth instar. F, Fifth instar. G, Adult.

± 0.03 , width across humeral angles 0.45 ± 0.05 , width across anterior margin 0.36 ± 0.05 ; hind leg: femur length 0.38 ± 0.05 , tibia length 0.43 ± 0.04 , tarsus length: I 0.12 ± 0.02 , II 0.15 ± 0.01 .

Third instar.—Slightly pyriform, maximum width across abdominal segment III. Head, pro- and mesonota pale brown; pro-

notum sometimes with humeral angles white; mesonotum with three or four white maculae near base. Antennal segments I and II pale brown with proximal and distal ends white; segments III and IV dark brown with base white. Labial segments I to III pale gray, most of segment IV dark brown, especially apex. Most of metanotum white,

except for a brown line near base. Thoracic pleura brown, propleuron sometimes surrounded by red lines; meso- and metapleura with two white maculae on middle area. Femora pale brown with distal ends white, tibiae and tarsi pale grayish yellow. Abdomen variegated with red and yellow areas; red bands at least present on borders of segments II to VII. Grayish macula on segments II and III becoming more apparent and corners becoming rounded. Two more grayish maculae appear mesially on segments IV and V. Scent gland openings more apparent and coloration changing to dark brown. Labium reaching metacoxae. *Measurements* ($n = 10$): Body length 2.3 ± 0.12 ; head length 0.41 ± 0.05 , width across eyes 0.54 ± 0.03 ; interocular distance 0.36 ± 0.04 ; postocular distance 0.07 ± 0.06 ; antennal segments: I 0.18 ± 0.04 , II 0.33 ± 0.04 , III 0.35 ± 0.02 , IV 0.45 ± 0.04 ; labial segments: I 0.33 ± 0.03 , II 0.32 ± 0.03 , III 0.26 ± 0.03 , IV 0.19 ± 0.02 ; pronotum length 0.2 ± 0.04 , width across humeral angles 0.62 ± 0.03 , width across anterior margin 0.46 ± 0.04 ; hind leg: femur length 0.55 ± 0.03 , tibia length 0.62 ± 0.05 , tarsus length: I 0.19 ± 0.02 , II 0.18 ± 0.01 .

Fourth instar.—Oval, slightly elongated, maximum width across abdominal segment II. Head brown; antennal segments I and II yellowish brown, segments III and IV dark brown; labial segments I and II yellowish brown, III yellow, and IV dark brown. Antennal segment I smallest, other three of similar size. Pronotum dark brown, sometimes with a pair of yellowish maculae on each side of middle line. Mesonotum brown, with five or six round yellow maculae sometimes joined. Metanotum brown and faintly visible, with one yellow macula on each side of middle line. Coxae whitish; femora and tibiae brown with proximal and distal ends white; tarsi I whitish, and tarsi II pale brown. Abdomen with red, yellow, and gray well defined. Red pattern generally begins near lateral margins of each segment, and sometimes extends to anterior

and/or posterior borders. Gray patterns generally occur on middle region of segments II–III, IV, V, and on each side of middle line on segments VI and VII. Yellow patterns form divisions between segments. Abdominal venter with brownish-gray patterns with some red markings, divisions between sternites yellow. Cephalic venter with two furrows slightly marked, running from base of antennae to posterior border of head. Labium reaching procoxae. Lateral margins of pro- and mesonota expanded. Fore femur with four or five spines on external face. Wing pads covering metanotum. *Measurements* ($n = 10$): Body length 3.6 ± 0.25 ; head length 0.52 ± 0.04 , width across eyes 0.7 ± 0.01 ; interocular distance 0.45 ± 0.01 ; postocular distance 0.08 ± 0.08 ; antennal segments: I 0.22 ± 0.001 , II 0.51 ± 0.02 , III 0.53 ± 0.02 , IV 0.62 ± 0.02 ; labial segments: I 0.45 ± 0.04 , II 0.44 ± 0.05 , III 0.34 ± 0.02 , IV 0.27 ± 0.04 ; pronotum length 0.44 ± 0.01 , width across humeral angles 0.86 ± 0.03 , width across anterior margin 0.58 ± 0.02 ; scutellum length 0.36 ± 0.02 , width 0.57 ± 0.03 ; hind leg: femur length 0.76 ± 0.04 , tibia length 0.88 ± 0.05 , tarsus length: I 0.26 ± 0.01 , II 0.21 ± 0.01 .

Fifth instar.—Elongated, with maximum width across abdominal segment II. Head dark brown with a few yellow areas near its base. Ocelli sometimes apparent as two red spots over molting suture. Femora brown with distal ends yellow; tibiae and tarsi grayish yellow. Pronotum dark brown with two or four yellow maculae near base. Mesonotum and metanotum with well-defined yellow and brown patterns; apices of wing pads dark brown. White areas of meso- and metapleura bigger and more apparent. Abdomen with similar coloration as fourth instar, although, red areas reduced in size. Abdominal venter generally grayish, but with its lateral margins reddish. *Measurements* ($n = 10$): Body length 3.94 ± 0.16 ; head length 0.5 ± 0.05 , width across eyes 0.89 ± 0.03 ; interocular distance 0.53 ± 0.04 ; interocellar distance 0.23 ± 0.23 ;

postocular distance 0.04 ± 0.04 ; antennal segments: I 0.29 ± 0.01 , II 0.75 ± 0.03 , III 0.75 ± 0.04 , IV 0.79 ± 0.05 ; labial segments: I 0.59 ± 0.05 , II 0.56 ± 0.05 , III 0.42 ± 0.04 , IV 0.3 ± 0.01 ; pronotum length 0.59 ± 0.06 , width across humeral angles 1.17 ± 0.04 , width across anterior margin 0.75 ± 0.06 ; scutellum length 0.63 ± 0.07 , width 0.74 ± 0.02 ; hind leg: femur length 1.15 ± 0.05 , tibia length 1.31 ± 0.12 , tarsus length: I 0.38 ± 0.04 , II 0.26 ± 0.02 .

Adult.—Body slightly elongated. Head brown; antennal segments I to III pale yellow, segment IV with basal quarter yellow and rest reddish brown. Tylus longer than juga. Labium reaching metacoxae. Pronotal lobes not differentiated; both lobes with middle line dark brown, without transverse depression. Lateral margins of anterior pronotal lobe slightly expanded. Scutellum dark brown, except apex and distal margins white. Internal angle of corial margin translucent. Membrane with a few pale brown spots between veins.

Male. Measurements ($n = 10$): Body length 4.27 ± 0.1 ; head length 0.53 ± 0.02 , width across eyes 0.8 ± 0.02 ; interocular distance 0.4 ± 0.02 ; interocellar distance 0.22 ± 0.21 ; postocular distance 0.04 ± 0.009 ; antennal segments: I 0.39 ± 0.03 , II 0.99 ± 0.06 , III 0.87 ± 0.05 , IV 0.86 ± 0.05 ; labial segments: I 0.55 ± 0.04 , II 0.6 ± 0.01 , III 0.47 ± 0.04 , IV 0.28 ± 0.02 ; pronotum length 0.78 ± 0.04 , width across humeral angles 1.31 ± 0.05 , width across anterior margin 0.63 ± 0.02 ; scutellum length 0.75 ± 0.03 , width 0.72 ± 0.03 ; hind leg: femur length 1.3 ± 0.07 , tibia length 1.54 ± 0.05 , tarsus length: I 0.46 ± 0.03 , II 0.13 ± 0.01 ; III 0.18 ± 0.02 .

Female. Measurements ($n = 10$): Body length 4.7 ± 0.12 ; head length 0.57 ± 0.06 , width across eyes 0.97 ± 0.04 ; interocular distance 0.48 ± 0.02 ; interocellar distance 0.24 ± 0.2 ; postocular distance 0.05 ± 0.02 ; antennal segments: I 0.38 ± 0.03 , II 1.01 ± 0.03 , III 0.91 ± 0.05 , IV 0.92 ± 0.03 ; labial segments: I 0.6 ± 0.04 , II 0.64

± 0.05 , III 0.53 ± 0.06 , IV 0.33 ± 0.04 ; pronotum length 0.86 ± 0.06 , width across humeral angles 1.52 ± 0.04 , width across anterior margin 0.76 ± 0.08 ; scutellum length 0.84 ± 0.02 , width 0.8 ± 0.03 ; hind leg: femur length 1.48 ± 0.06 , tibia length 1.7 ± 0.09 , tarsus length: I 0.5 ± 0.04 , II 0.12 ± 0.02 ; III 0.18 ± 0.02 .

Biology.—*Ozophora baranowskii* was the most common species. Nymphs and adults were found in the leaf litter feeding on the seeds of *Ficus aurea* Nutt., *F. colubrinae* Standl., *F. insipida*, *F. maxima*, *F. perforata* L., *F. pertusa* L., *F. petensis* Lundell., *F. tecolutensis* (Liemb.) Miq., and *F. yoponensis* in Los Tuxtlas, and of *F. cotinifolia* Kunth, *F. insipida*, *F. trigonata* L., and *F. obtusifolia* Kunth in La Mancha. Adults were also found near the base of trees, sometimes on the lower vegetation feeding on the seeds from birds or mammal droppings. They were found also on aerial roots and on the trees feeding on the opened fruits. Nymphs were found only in leaf litter, and this is why they are considered as obligatory terrestrial. They were generally very active. Newly molted females took around five days to oviposit; eggs were laid individually on the leaf or inside and outside the fruits that were offered as food while rearing them. A single female laid 34 eggs. Eggs turned reddish after four days, and first-instar nymphs emerged four days later. They fed very actively on seeds, and after seven days they molted to the second instar. It was during the second instar when the greatest mortality occurred. Second and third instars took five days to develop, while fourth and fifth instars took six days.

This species was found associated with *Ozophora maculata*, *Cligenes distinctus* Distant, and *Botocudo* sp., although it was usually the first one to arrive soon after a fruiting tree started to drop fruits. *Alloeorhynchus trimacula* (Stein) (Nabidae) was found preying on nymphs and adults of this species.

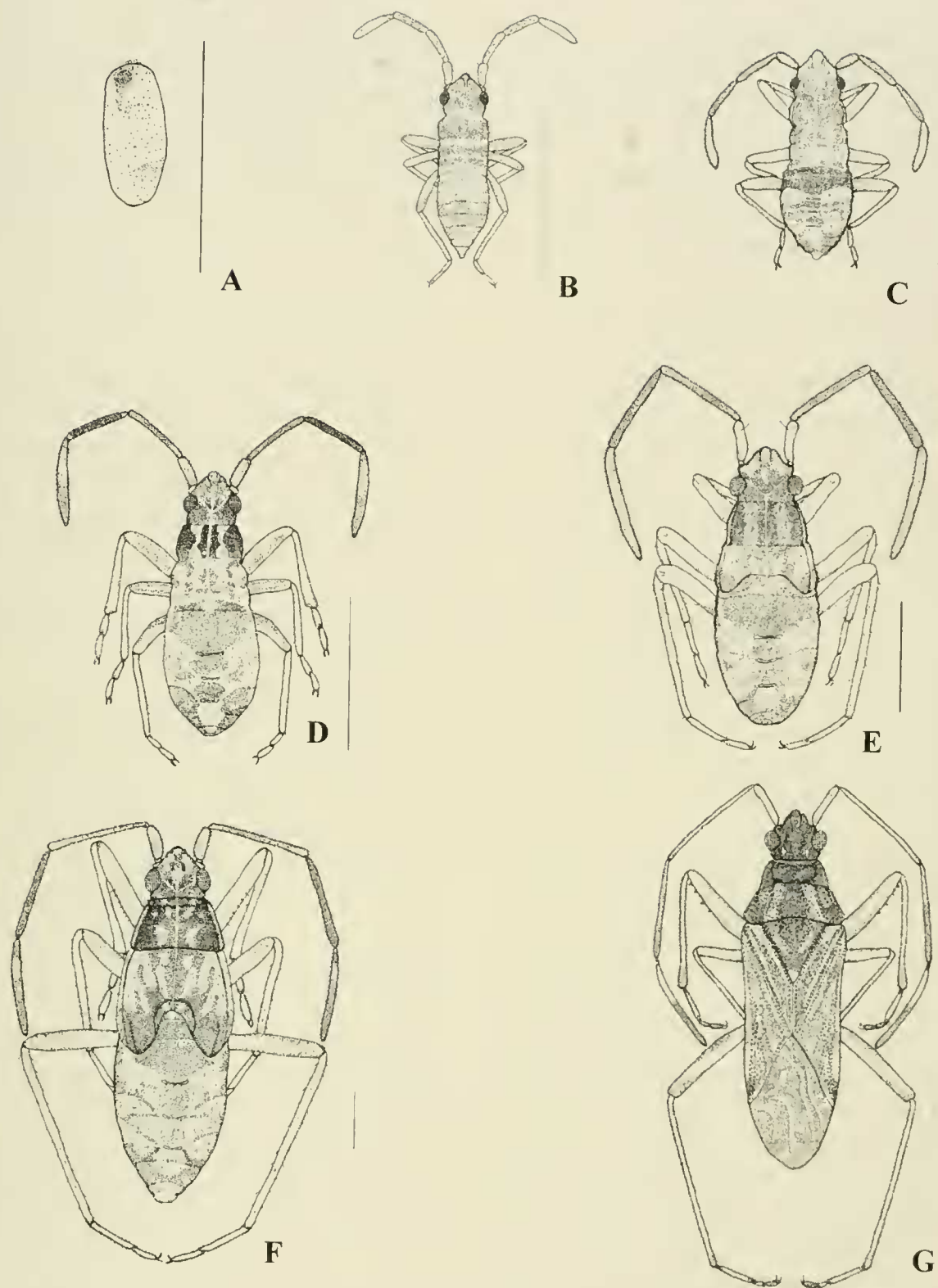


Fig. 3. *Ozophora concava*. A, Egg, lateral view. B, First instar. C, Second instar. D, Third instar. E, Fourth instar. F, Fifth instar. G, Adult.

Ozophora concava Distant
(Figs. 3A-G)

Egg.—Cylindrical, with round poles, posterior pole slightly pointed. Length 1.0 ± 0.12 mm, width 0.42 ± 0.03 . Pale yellow when laid, but turning reddish when nymphs start to develop. Eyes appear as red spots. Corial surface with small punctures

and with a few small setae. Anterior pole with 4 or 5 small mycophilic processes.

First instar.—Elongated; body surface covered with long hairs. Head, pro-, meso-, metanota, labium, legs, and thoracic pleura pale brown. Eyes bright red. Antennal segments I and II gray, III dark brown, and IV dark brown at base and gradually

turning pale yellow anteriorly. Labium reaching first abdominal sternite. Thoracic pleura delimited by red lines. Unions between head, thoracic segments, middle line of thorax, and most of the abdomen pale yellow except a red band running transversely through segments IV and V. Plates of scent gland openings on segments III–IV, IV–V, and V–VI appear as narrow brown bands. *Measurements* ($n = 10$): Body length 1.54 ± 0.06 ; head length 0.32 ± 0.03 , width across eyes 0.37 ± 0.02 ; interocular distance 0.22 ± 0.02 ; postocular distance 0.44 ± 0.03 ; antennal segments: I 0.14 ± 0.01 , II 0.26 ± 0.01 , III 0.28 ± 0.02 , IV 0.46 ± 0.01 ; labial segments: I 0.25 ± 0.02 , II 0.22 ± 0.02 , III 0.20 ± 0.01 , IV 0.17 ± 0.02 ; pronotum length 0.15 ± 0.08 , width across humeral angles 0.39 ± 0.07 , width across anterior margin 0.31 ± 0.20 ; hind leg: femur length 0.42 ± 0.02 , tibia length 0.50 ± 0.1 , tarsus length: I 0.15 ± 0 , II 0.10 ± 0.06 .

Second instar.—Elongated, with abdomen wider than the thorax. Body surface covered with long hairs, more apparent than in the first instar. Anterior end of head, from apex of eyes to apex of tylus pale brown, rest of head dark brown. Antennal segments I and II pale brown, segment III dark brown; union between segments III and IV red, base of segment IV dark brown, followed by a pale yellow annulus, distal half pale brown. Labium and legs pale brown, femora slightly darker. Venter and dorsum of abdominal segments I, II, and III dark brown. Joints between segments III to VII pale yellow. Scent glands only slightly apparent, delimited by dark brown lines. Abdominal sternites IV, VI, VII, and VIII variegated with pale yellow and brown areas; sternite V reddish brown, “Y” suture not very apparent. Labium only reaching metacoxae. *Measurements* ($n = 10$): Body length 1.88 ± 0.27 ; head length 0.41 ± 0.0 , width across eyes 0.51 ± 0 ; interocular distance 0.29 ± 0.03 ; postocular distance 0.16 ± 0.02 ; antennal segments: I 0.19 ± 0.02 , II 0.45 ± 0.02 , III 0.44 ± 0.04 , IV $0.16 \pm$

0.04 ; labial segments: I 0.35 ± 0.02 , II 0.36 ± 0.07 , III 0.26 ± 0.01 , IV 0.22 ± 0.01 ; pronotum length 0.23 ± 0.01 , width across humeral angles 0.51 ± 0.03 , width across anterior margin 0.36 ± 0.03 ; hind leg: femur length 0.55 ± 0.03 , tibia length 0.68 ± 0.05 , tarsus length: I 0.22 ± 0.02 , II 0.19 ± 0.03 .

Third instar.—Elongated, with maximum width across abdominal segment IV. Body covered with long silvery and brown hairs. Eyes reddish brown. Labium pale brown. Head as in second instar, except for region posterior to eyes becoming darker. Antennal segment I pale yellow, segment II pale brown, III dark brown, joints between segment III and IV red; base of segment IV dark brown, with a yellow annulus and distal half pale brown. Middle line of pro-, meso-, and metanota pale yellow, followed by a dark brown band, then a yellow band; pro-, and mesonota with a wide dark brown band over lateral margins. Thoracic pleura dark brown; coxae, and trochanters pale yellow; femora dark brown; tibiae, and tarsi pale brown. Frontal margin of prosternum with a red line. First three abdominal segments dark brown, middle area of first, and distal third of third pale yellow; some areas of lateral margins of these segments with a reddish coloration. “Y” suture with yellow and red lines. Abdominal segments IV to VIII with irregular red, yellow, and pale brown spots. Two dark brown mesial maculae between segments IV and V. Abdominal venter with dark brown bands running closer to posterior margin of each sternite; rest of abdomen and spiracles pale yellow. *Measurements* ($n = 10$): Body length 2.43 ± 0.01 ; head length 0.46 ± 0.02 , width across eyes 0.58 ± 0.05 ; interocular distance 0.32 ± 0.03 ; postocular distance 0.10 ± 0.01 ; antennal segments: I 0.22 ± 0.05 , II 0.53 ± 0.12 , III 0.57 ± 0.05 , IV 0.66 ± 0.05 ; labial segments: I 0.4 ± 0.04 , II 0.4 ± 0.03 , III 0.28 ± 0.03 , IV 0.23 ± 0.01 ; pronotum length 0.31 ± 0.03 , width across humeral angles 0.64 ± 0.08 , width across anterior margin 0.44 ± 0.02 ; hind leg: fe-

mur length 0.76 ± 0.11 , tibia length 0.99 ± 0.08 , tarsus length: I 0.26 ± 0.03 , II 0.22 ± 0.02 .

Fourth instar.—Body elongated, with posterior end slightly narrowed. Similar to third instar, although red coloration on abdomen lighter. Labium reaching abdominal sternite I. Distal half of hind femur darker. Wing pads present, covering metanotum almost completely. Lateral margins of abdomen slightly convex; dark brown areas with numerous punctures and setae. Fore femur with 6 spines. *Measurements* ($n = 10$): Body length 3.77 ± 0.26 ; head length 0.56 ± 0.03 , width across eyes 0.77 ± 0.03 ; interocular distance 0.44 ± 0.03 ; postocular distance 0.20 ± 0.02 ; antennal segments: I 0.35 ± 0.05 , II 0.92 ± 0.13 , III 0.81 ± 0.08 , IV 1.03 ± 0.04 ; labial segments: I 0.56 ± 0.05 , II 0.56 ± 0.03 , III 0.42 ± 0.03 , IV 0.31 ± 0.01 ; pronotum length 0.51 ± 0.03 , width across humeral angles 0.29 ± 0.05 , width across anterior margin 0.6 ± 0.04 ; scutellum length 0.67 ± 0.11 , width 0.63 ± 0.05 ; hind leg: femur length 1.17 ± 0.09 , tibia length 1.5 ± 0.1 , tarsus length: I 0.4 ± 0.04 , II 0.3 ± 0.04 .

Fifth instar.—Elongated, maximum width across abdominal segment II. Head with one dark area on each side of midline, starting near molting suture and extending slightly in front of eyes. Ocelli present as two red spots over molting suture. Antennal segments I and II, labium, femora, tibiae, and tarsi pale yellow; coxae and trochanters creamy yellow. Pronotal and wing pad margins pale yellow, followed mesially by a conspicuous dark brown line. Pale yellow areas of abdomen white in some individuals. Wing pads reaching middle area of abdominal segment III. Labium reaching metacoxae. *Measurements* ($n = 10$): Body length 4.59 ± 0.52 ; head length 0.64 ± 0.03 , width across eyes 0.93 ± 0.09 ; interocular distance 0.48 ± 0.05 ; interocellar distance 0.39 ± 0.01 ; postocular distance 0.26 ± 0.22 ; antennal segments: I 0.27 ± 0.05 , II 1.21 ± 0.13 , III 1.8 ± 0.15 , IV 1.23 ± 0.18 ; labial segments: I 0.76 ± 0.04 , II

0.73 ± 0.07 , III 0.51 ± 0.07 , IV 0.35 ± 0.0 ; pronotum length 0.66 ± 0.06 , width across humeral angles 1.28 ± 0.09 , width across anterior margin 0.7 ± 0.06 ; scutellum length 0.6 ± 0.04 , width 0.83 ± 0.12 ; hind leg: femur length 1.87 ± 0.41 , tibia length 2.41 ± 0.46 , tarsus length: I 0.55 ± 0.08 , II 0.33 ± 0.04 .

Adult.—Large, 6 to 7 mm long; body elongated. Easy to distinguish from other species by numerous erect hairs covering dorsal surface. Head, pronotum, scutellum and thoracic pleura dark brown. Antennal segments I to III, labium, and legs brownish yellow; base and distal half of antennal segment IV dark brown, proximal half yellow. Hemelytron brown, covered with dark brown punctures and with few yellow areas near lateral margins. Veins and claval suture brownish yellow. Membrane smoky with pale yellow veins. Abdominal venter reddish brown. Labium reaching metacoxae. Lateral margins of pronotum rounded.

Male: Measurements ($n = 10$): Body length 6.33 ± 0.24 ; head length 0.89 ± 0.07 , width across eyes 0.5 ± 0.04 ; interocular distance 0.44 ± 0.04 ; interocellar distance 0.24 ± 0.03 ; postocular distance 0.14 ± 0.04 ; antennal segments: I 0.84 ± 0.05 , II 2.18 ± 0.17 , III 1.77 ± 0.06 , IV 2.06 ± 0.09 ; labial segments: I 0.89 ± 0.06 , II 0.84 ± 0.08 , III 0.67 ± 0.09 , IV 0.36 ± 0.07 ; pronotum length 1.05 ± 0.05 , width across humeral angles 1.69 ± 0.09 , width across anterior margin 0.74 ± 0.02 ; scutellum length 0.99 ± 0.09 , width 0.96 ± 0.09 ; hind leg: femur length 2.5 ± 0.24 , tibia length 3.6 ± 0.38 , tarsus length: I 0.88 ± 0.08 , II 0.15 ± 0.03 ; III 0.22 ± 0.04 .

Female: Measurements ($n = 10$): Body length 6.97 ± 0.24 ; head length 0.91 ± 0.09 , width across eyes 1.14 ± 0.06 ; interocular distance 0.49 ± 0.01 ; interocellar distance 0.24 ± 0.02 ; postocular distance 0.22 ± 0.02 ; antennal segments: I 0.8 ± 0.05 , II 2.04 ± 0.15 , III 1.65 ± 0.07 , IV 1.83 ± 0.10 ; labial segments: I 0.94 ± 0.12 , II 0.91 ± 0.10 , III 0.77 ± 0.08 , IV 0.36 ± 0.04 ; pronotum length 1.17 ± 0.18 , width

across humeral angles 1.89 ± 0.16 , width across anterior margin 0.07 ± 0.22 ; scutellum length 1.08 ± 0.10 , width 1.07 ± 0.07 ; hind leg: femur length 2.46 ± 0.23 , tibia length 3.31 ± 0.2 , tarsus length: I 0.9 ± 0.09 , II 0.17 ± 0.02 ; III 0.22 ± 0.02 .

Biology.—This species was common in Los Tuxtlas and rare in La Mancha. In the field it was easily mistaken for *Ozophora consanguinea* because both species could be found in the same microhabitat and are of similar size. *Ozophora concava* has a darker coloration and abundant hairs on the body surface. Adults and nymphs were found in the leaf litter or in the soil very near the base of the trunk, aerial roots, and buttresses. In Los Tuxtlas, was found associated with *Ficus aurea*, *F. colubrinae*, *F. insipida*, *F. maxima*, *F. perforata*, *F. pertusa*, *F. petensis*, *F. tecolutensis*, and *F. yoponensis*, and in La Mancha with *Ficus cotinifolia*, *F. insipida*, and *F. trigonata*. This species is considered an obligatory terrestrial. Laboratory observations showed that females oviposited five days after mating and attached the eggs to the fruit or leaf. Newly laid eggs were white. They turned yellow after one day; six days later they turned reddish and eight days later the first instar nymphs emerged. Fifteen days later the second instar appeared. It took 9 days to molt into third instar, 8 days to the fourth, 7 days to the fifth, and 15 days to the adult.

Ozophora consanguinea Distant
(Figs. 4A–G)

Egg.—Creamy yellow when laid; becoming reddish in 6 days, especially eyes and antenna. Length 1.05 ± 0.03 mm, width 0.44 ± 0.05 mm, with posterior pole round and anterior pole slightly flattened and with five short micropylar processes.

First instar.—Elongated. Head, and pronotum grayish yellow. Eyes red. Antennal segments I to III pale brown, with base and apex white; basal third of segment IV pale brown, rest pale yellow. Labium yellow, except pale brown distal end. Meso- and

metanota, and meso- and metapleura dark brown. Legs pale yellow, femora pale grayish. Abdomen yellow, except a red transverse band across segments IV and V. Tylus slightly shorter than antennal segment I. Labium reaching base of abdominal sternite V. Scent gland openings faintly apparent on segments III–IV, IV–V, and V–VI. Head, thorax, and first two abdominal segments with long hairs on dorsal surface. *Measurements* ($n = 10$): Body length 1.16 ± 0.06 ; head length 0.26 ± 0.02 , width across eyes 0.31 ± 0.01 ; interocular distance 0.21 ± 0.08 ; postocular distance 0.05 ± 0.01 ; antennal segments: I 0.11 ± 0.01 , II 0.16 ± 0.01 , III 0.17 ± 0.01 , IV 0.28 ± 0.02 ; labial segments: I 0.19 ± 0.0 , II 0.16 ± 0.01 , III 0.16 ± 0.01 , IV 0.14 ± 0.01 ; pronotum length 0.15 ± 0.02 , width across humeral angles 0.33 ± 0.01 , width across anterior margin 0.29 ± 0.01 ; hind leg: femur length 0.28 ± 0.02 , tibia length 0.29 ± 0.01 , tarsus length: I 0.08 ± 0 , II 0.09 ± 0.01 .

Second instar.—Head and thorax brown. Antennal segments pale brown; proximal and distal ends of segments I to III, and base of segment IV white. Labium and legs pale brown. Abdomen pale yellow; dorsal surface of segments II and III pale brown. Scent gland openings pale brown. Red abdominal band turns lighter and only margins apparent. Labium reaching abdominal sternite IV. *Measurements* ($n = 10$): Body length 1.57 ± 0.08 ; head length 0.36 ± 0.04 , width across eyes 0.38 ± 0.04 ; interocular distance 0.26 ± 0.01 ; postocular distance 0.07 ± 0.01 ; antennal segments: I 0.1 ± 0.02 , II 0.25 ± 0.02 , III 0.27 ± 0.04 , IV 0.4 ± 0.05 ; labial segments: I 0.24 ± 0.03 , II 0.21 ± 0.02 , III 0.17 ± 0.02 , IV 0.18 ± 0.02 ; pronotum length 0.17 ± 0.01 , width across humeral angles 0.4 ± 0.01 , width across anterior margin 0.35 ± 0.05 ; hind leg: femur length 0.45 ± 0.05 , tibia length 0.52 ± 0.03 , tarsus length: I 0.18 ± 0.01 , II 0.16 ± 0.02 .

Third instar.—Head and pronotum dark brown. Antenna, labium, and legs as in second instar. Meso- and metanota with dark

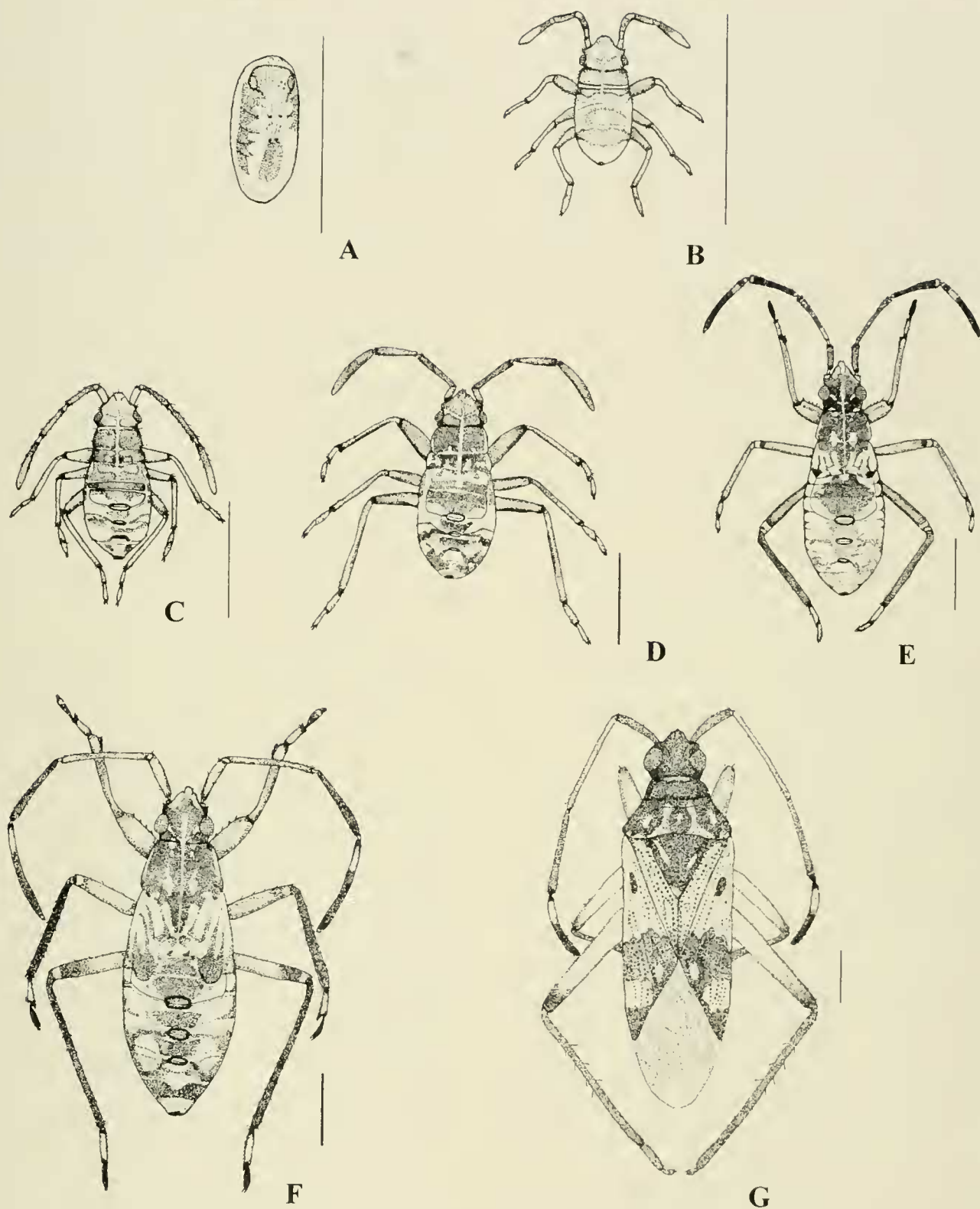


Fig. 4. *Ozophora consanguinea*. A, Egg, lateral view. B, First instar. C, Second instar. D, Third instar. E, Fourth instar. F, Fifth instar. G, Adult.

brown and creamy yellow spots over lateral margins and on each side of middle line. Dorsal surface of segments II and anterior half of III pale brown, rest of abdominal segments pale yellow, except with a long red macula situated between scent gland openings of segments III–IV and IV–V, and some red lines on joints of segments IV–V

and V–VI. “Y” suture marked slightly by red and dark brown lines. Scent gland openings of segments III–IV, IV–V, and V–VI pale brown. Labium reaching base of sternite III, inner side of fore femur with a series of equally separated spines. *Measurements* ($n = 10$): Body length 2.4 ± 0.49 ; head length 0.51 ± 0.1 , width across eyes

0.58 \pm 0.09; interocular distance 0.34 \pm 0.03; postocular distance 0.08 \pm 0.02; antennal segments: I 0.26 \pm 0.08, II 0.51 \pm 0.21, III 0.55 \pm 0.17, IV 0.69 \pm 0.17; labial segments: I 0.38 \pm 0.08, II 0.37 \pm 0.1, III 0.31 \pm 0.06, IV 0.25 \pm 0.04; pronotum length 0.31 \pm 0.06, width across humeral angles 0.63 \pm 0.1, width across anterior margin 0.48 \pm 0.05; hind leg: femur length 0.77 \pm 0.19, tibia length 0.98 \pm 0.42, tarsus length: I 0.27 \pm 0.08, II 0.22 \pm 0.04.

Fourth instar.—Head, pronotum, and mesonotum dark brown; midline and some areas of pro- and mesonota pale yellow. Antennal segments I and II pale brown, segment III dark brown, segment IV with a subbasal white annulus and rest dark brown. Legs dark brown, except pale brown tarsus I. Dark brown mesial macula on abdominal segments II and III. Thoracic pleura dark brown. Other characteristics as in third instar. Labium reaching metacoxae. Wing pads covering metanotum. *Measurements* (n = 10): Body length 3.6 \pm 0.53; head length 0.62 \pm 0.08, width across eyes 0.76 \pm 0.04; interocular distance 0.44 \pm 0.03; postocular distance 0.09 \pm 0.04; antennal segments: I 0.39 \pm 0.08, II 0.88 \pm 0.11, III 0.82 \pm 0.12, IV 1.02 \pm 0.14; labial segments: I 0.54 \pm 0.06, II 0.5 \pm 0.06, III 0.45 \pm 0.07, IV 0.32 \pm 0.02; pronotum length 0.51 \pm 0.05, width across humeral angles 0.9 \pm 0.08, width across anterior margin 0.61 \pm 0.04; scutellum length 0.38 \pm 0.06, width 0.49 \pm 0.11; hind leg: femur length 1.24 \pm 0.2, tibia length 1.53 \pm 0.22, tarsus length: I 0.41 \pm 0.08, II 0.3 \pm 0.04.

Fifth instar.—Head, and pronotum dark brownish black, with a few brownish-yellow spots situated near juga and base of pronotum. Scutellum dark brown with a reddish macula on each side of midline. Bases of wing pads pale yellow, apices dark brown. Dark brown macula of abdominal segments II, and III darker, as well as scent gland openings. Rest of abdomen variegated with yellow, red and dark brown. Labium slightly longer than mesocoxae. Antennal segment I with short spines; antennal

segments II, III, and IV covered by fine setae. Fore femur with 5 or 6 prominent spines. Wing pads reaching middle of abdominal segment III. *Measurements* (n = 10): Body length 5.5 \pm 0.58; head length 0.81 \pm 0.11, width across eyes 1.04 \pm 0.04; interocular distance 0.54 \pm 0.04; interocellar distance 0.25 \pm 0.01; postocular distance 0.12 \pm 0.05; antennal segments: I 0.74 \pm 0.04, II 1.47 \pm 0.07, III 1.29 \pm 0.06, IV 1.7 \pm 0.08; labial segments: I 0.74 \pm 0.07, II 0.7 \pm 0.06, III 0.59 \pm 0.08, IV 0.4 \pm 0.03; pronotum length 0.78 \pm 0.07, width across humeral angles 1.42 \pm 0.08, width across anterior margin 0.83 \pm 0.05; scutellum length 0.82 \pm 0.09, width 0.87 \pm 0.08; hind leg: femur length 2.21 \pm 0.09, tibia length 2.74 \pm 0.09, tarsus length: I 0.67 \pm 0.06, II 0.43 \pm 0.05.

Adult.—Body elongated (one of largest species treated here), 6 to 7 mm long, lateral margins of posterior pronotal lobe knife sharp. Head, anterior pronotal lobe, and thoracic pleura dark brown. Antennal segments I to III, labium and legs brownish yellow; antennal segment IV with base and distal half dark brown, proximal half with a white annulus. Posterior pronotal lobe with dark brown bands and with numerous dark brown markings; generally posterior margin a creamy coloration. Scutellum generally dark brown, although in a few specimens with lighter coloration near its apex. Clavus dark brown. Hemelytron creamy white with dark brown punctures and a transverse dark brown band near middle area; a pair of dark brown maculae near its apex; base sometimes with a dark brown macula. Membrane smoky with veins slightly lighter. Abdominal venter brownish red. Labium exceeding mesocoxae. Dorsal surface of body without long hairs.

Male: Measurements (n = 10): Body length 6.17 \pm 0.38; head length 0.82 \pm 0.08, width across eyes 1.06 \pm 0.04; interocular distance 0.43 \pm 0.03; interocellar distance 0.24 \pm 0.05; postocular distance 0.12 \pm 0.02; antennal segments: I 0.85 \pm 0.1, II 1.81 \pm 0.09, III 1.51 \pm 0.08, IV 1.92

± 0.25 ; labial segments: I 0.87 ± 0.07 , II 0.84 ± 0.09 , III 0.62 ± 0.04 , IV 0.46 ± 0.04 ; pronotum length 1.0 ± 0.04 , width across humeral angles 1.78 ± 0.37 , width across anterior margin 0.76 ± 0.04 ; scutellum length 1.02 ± 0.08 , width 0.9 ± 0.09 ; hind leg: femur length 2.53 ± 0.24 , tibia length 2.9 ± 0.28 , tarsus length: I 0.78 ± 0.11 , II 0.17 ± 0.02 ; III 0.21 ± 0.02 .

Female: Measurements ($n = 10$): Body length 6.86 ± 0.45 ; head length 0.93 ± 0.06 , width across eyes 1.12 ± 0.04 ; interocular distance 0.51 ± 0.03 ; interocellar distance 0.27 ± 0.04 ; postocular distance 0.14 ± 0.03 ; antennal segments: I 0.78 ± 0.13 , II 2.01 ± 0.49 , III 1.47 ± 0.17 , IV 1.81 ± 0.32 ; labial segments: I 0.9 ± 0.08 , II 0.93 ± 0.05 , III 0.63 ± 0.07 , IV 0.44 ± 0.04 ; pronotum length 1.11 ± 0.08 , width across humeral angles 1.89 ± 0.13 , width across anterior margin 0.82 ± 0.04 ; scutellum length 1.16 ± 0.1 , width 1.08 ± 0.1 ; hind leg: femur length 2.52 ± 0.42 , tibia length 3.02 ± 0.46 , tarsus length: I 0.8 ± 0.15 , II 0.18 ± 0.04 ; III 0.22 ± 0.02 .

Biology.—This was common and is one of the largest species, found all year around. At Los Tuxtlas, adults and nymphs were found on leaf litter near the base of trees, around tree buttresses, and on aerial roots, tree crevices, and tree forks where leaf litter had accumulated. In Los Tuxtlas, *O. consanguinea* was found on *Ficus colubrinae*, *F. insipida*, *F. maxima*, *F. perforata*, *F. pertusa*, *F. tecolutensis*, and *F. yoponensis*. In La Mancha, it was found on *F. cotinifolia*, *F. insipida*, and *F. trigonata*.

In the laboratory, adults took five to eight days to oviposit after mating. Females laid between 20 to 40 eggs on the leaves and the inside and outside of fruits. The entire life cycle lasted 63 days. Eggs were white when laid; 7 days later they turned reddish and 8 days later they hatched. First instars lasted seven days, second 10 days, third instar 12 days, fourth 10 days, and fifth 11 days. This species is considered arboreal. It was found several times associated with *O.*

concava, and around the tree forks it was associated with *Chohula maculatus* Distant.

Ozophora maculata Slater and O'Donnell
(Figs. 5A–G)

Egg.—Cylindrical; length 0.8 ± 0 mm, width 0.33 ± 0.02 mm; with anterior pole rounded, and posterior pole slightly pointed. Pale yellow when laid, turning reddish with development. Eyes appear as red spots; corium without ornamentation, operculum with three to four micropylar processes.

First instar.—Elongated, with shape of egg; maximum width through abdominal segment III. Head, pro-, meso-, metanota, and thoracic pleura pale brown. Eyes bright red. Antennal segments I to III pale brown with proximal and distal ends white, segment IV with base pale brown and becoming lighter towards apex. Labium and femora grayish yellow; tibiae and tarsi pale yellow. Division between head and thoracic segments pale yellow. Abdominal segments pale yellow; segments III to VIII variegated with small red markings, although these markings more concentrated between scent gland openings III–IV and IV–V. Scent gland openings faintly visible as fine lines. Labium slightly exceeding metacoxae. *Measurements* ($n = 10$): Body length 1.12 ± 0.06 ; head length 0.24 ± 0.03 , width across eyes 0.28 ± 0.01 ; interocular distance 0.2 ± 0.01 ; postocular distance 0.08 ± 0.02 ; antennal segments: I 0.10 ± 0.0 , II 0.13 ± 0.01 , III 0.14 ± 0.01 , IV 0.25 ± 0.0 ; labial segments: I 0.20 ± 0.01 , II 0.16 ± 0.01 , III 0.14 ± 0.01 , IV 0.14 ± 0.01 ; pronotum length 0.11 ± 0.01 , width across humeral angles 0.32 ± 0.02 , width across anterior margin 0.26 ± 0.01 ; hind leg: femur length 0.26 ± 0.01 , tibia length 0.26 ± 0.02 , tarsus length: I 0.10 ± 0 , II 0.12 ± 0.01 .

Second instar.—Slightly pyriform, maximum width across abdominal segment IV. Head, pro- and mesonota, and thoracic pleura brown. Antenna, labium, and legs pale brown, femora slightly darker. Abdom-

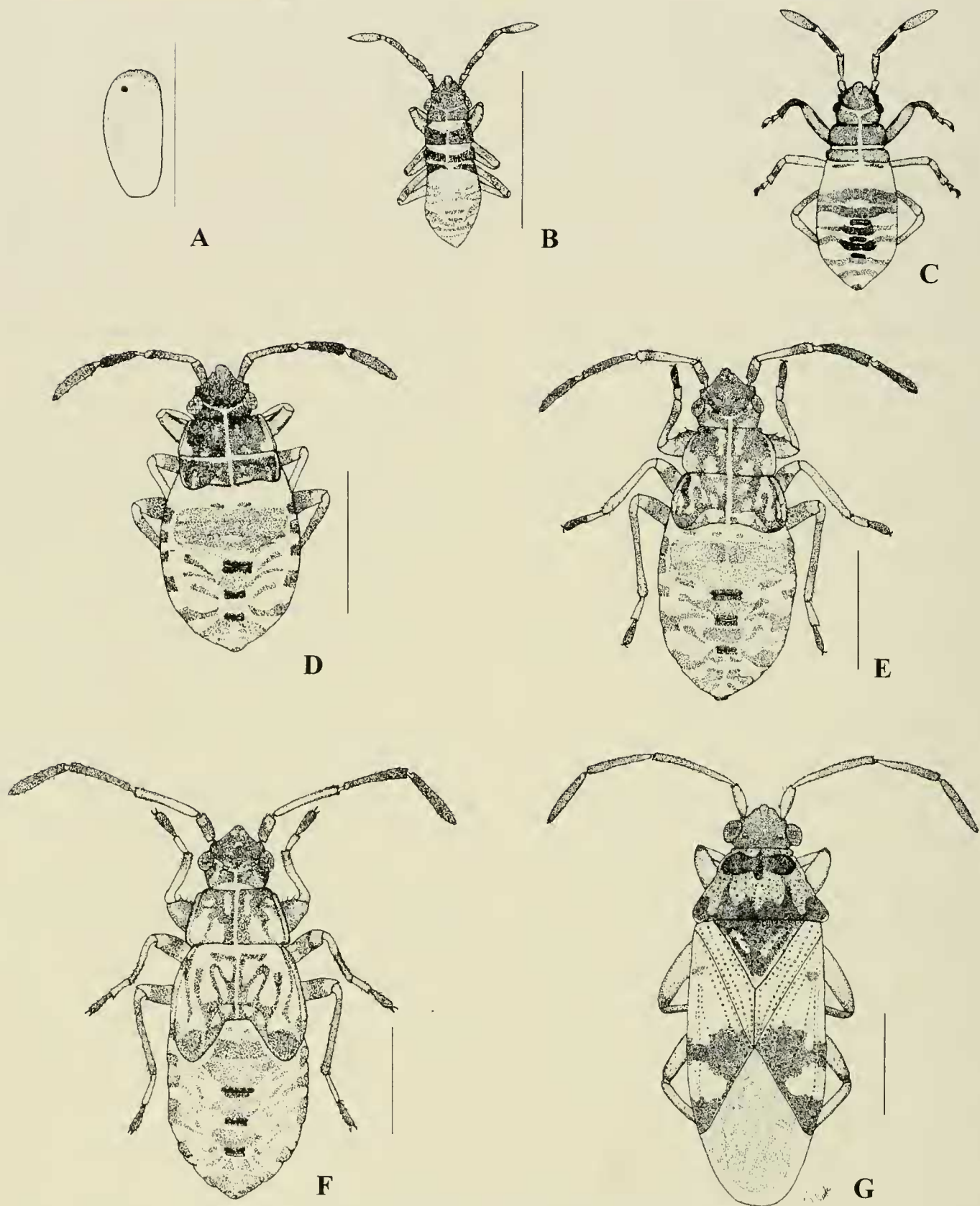


Fig. 5. *Ozophora maculata*. A, Egg, lateral view. B, First instar. C, Second instar. D, Third instar. E, Fourth instar. F, Fifth instar. G, Adult.

inal segment II and anterior half of segment III pale brown; rest of abdomen with pale yellow and pale brown areas, sometimes pale brown areas form transverse bands. Labium reaching mesocoxae. *Measurements* ($n = 10$): Body length 1.54 ± 0.1 ;

head length 0.34 ± 0.03 , width across eyes 0.39 ± 0.01 ; interocular distance 0.26 ± 0.02 ; postocular distance 0.09 ± 0.01 ; antennal segments: I 0.13 ± 0.01 , II 0.24 ± 0.0 , III 0.25 ± 0.01 , IV 0.36 ± 0.02 ; labial segments: I 0.25 ± 0.01 , II 0.24 ± 0.01 , III

0.18 \pm 0.01, IV 0.17 \pm 0.01; pronotum length 0.18 \pm 0.01, width across humeral angles 0.44 \pm 0.32, width across anterior margin 0.34 \pm 0.01; hind leg: femur length 0.34 \pm 0.02, tibia length 0.41 \pm 0.04, tarsus length: I 0.12 \pm 0, II 0.15 \pm 0.01.

Third instar.—Pyriform, maximum width across abdominal segment III. Head, pronotum, and mesonota, and thoracic pleura brown; pronotum with area of humeral angles white and one white macula on each side of middle line near posterior margin; mesonotum with three white maculae, two very close to middle line and one slightly closer to lateral margin. Metanotum almost completely white, except a thin brown line over anterior margin. Antennal segments I and II pale brown, with base and apex white; segments III and IV brown, with base white. Labium grayish yellow, with apex of segment IV brown. Legs grayish yellow; femora slightly darker. Abdominal segments appear more reddish than in second instar, sometimes with red bands through each segment and in some individuals grayish bands also present. Scent gland openings of segments III–IV, IV–V, and V–VI slightly rectangular and brown. Labium slightly exceeding metacoxae. “Y” suture slightly visible. *Measurements* (n = 8): Body length 2.05 \pm 0.08; head length 0.35 \pm 0.04, width across eyes 0.48 \pm 0.03; interocular distance 0.30 \pm 0.02; postocular distance 0.13 \pm 0.05; antennal segments: I 0.15 \pm 0.02, II 0.31 \pm 0.02, III 0.31 \pm 0.02, IV 0.37 \pm 0.03; labial segments: I 0.33 \pm 0.05, II 0.31 \pm 0.03, III 0.23 \pm 0.02, IV 0.20 \pm 0.01; pronotum length 0.25 \pm 0, width across humeral angles 0.61 \pm 0.05, width across anterior margin 0.38 \pm 0.03; hind leg: femur length 0.42 \pm 0.02, tibia length 0.54 \pm 0.02, tarsus length: I 0.15 \pm 0.01, II 0.15 \pm 0.01

Fourth instar.—Slightly elongated, abdomen wider than rest of body. Head completely brown; eyes reddish brown; antenna and labium as in previous instar. Pro-, meso-, and visible part of metanota with several white maculae as follows: pronotum

with one long macula on each side of middle line and four round maculae over posterior margin; mesonotum with four maculae on area that corresponds to scutellum and one “A” shaped macula on wing pads, some individuals also with one small macula on lateral margins; metanotum almost all white with only a brown line over posterior margin. Abdomen yellow with red bands along each segment, mostly appearing as divided bands. One semicircular grayish yellow area in front of each scent gland opening. Lateral margins of pro- and mesonota slightly expanded. Fore femur with three spines on internal ventral margin. Labium only reaching metacoxae. Mesothoracic wing pads covering most of lateral areas of metanotum. “Y” suture slightly more apparent. *Measurements* (n = 10): Body length 2.69 \pm 0.24; head length 0.44 \pm 0.03, width across eyes 0.61 \pm 0.03; interocular distance 0.41 \pm 0.03; postocular distance 0.07 \pm 0.04; antennal segments: I 0.21 \pm 0.02, II 0.5 \pm 0, III 0.45 \pm 0.03, IV 0.57 \pm 0.02; labial segments: I 0.47 \pm 0.02, II 0.44 \pm 0.03, III 0.32 \pm 0.03, IV 0.24 \pm 0.0; pronotum length 0.41 \pm 0.03, width across humeral angles 0.71 \pm 0.06, width across anterior margin 0.5 \pm 0.04; scutellum length 0.31 \pm 0.02, width 0.47 \pm 0.03; hind leg: femur length 0.59 \pm 0.04, tibia length 0.72 \pm 0.02, tarsus length: I 0.26 \pm 0.02, II 0.21 \pm 0.01.

Fifth instar.—Elongated, maximum width across abdominal segment III. Head dark brown, two creamy-yellow semitriangular maculae on base of head and two small maculae on base of tylus; ventral surface of head brown with one longitudinal band running from base of antenna to base of head. Eyes reddish brown. First antennal segment pale brown; second segment grayish yellow with apex slightly brownish; third and fourth segments dark brown with base white. Labium grayish yellow, third segment slightly paler. Pronotum with anterior half dark brown, except for long yellowish macula on each side of middle line, and two small maculae on each side of discal area; pos-

terior half creamy yellow with a wide brown band on each side of middle line and one thin band half way to lateral margin. Meso- and metanota variegated with well-defined patterns of creamy yellow and pale brown, dark areas defining scutellum and wing pads; apical fourth of mesothoracic wing pad dark brown. Pleura dark brown, propleuron usually with only one small white macula, meso- and metapleura with two rectangular white areas. Coxae creamy; femora with proximal and distal ends creamy yellow, rest brown, fore femur slightly darker; tibiae and tarsi yellowish brown. Abdomen with a series of grayish areas anterior to scent gland openings III–IV, IV–V, and V–VI, first one slightly trapezoidal and other two oval. Rest of dorsal surface variegated with creamy yellow, red, and grayish areas; scent gland openings of segments III–IV, IV–V and V–VI on rectangular brown plates. Ventral surface almost all grayish, with divisions between segments creamy yellow. Labium slightly longer than mesocoxae. Lateral margins of pro- and mesonota emarginated. Mesothoracic wing pads slightly longer than base of abdominal segment III. Fore femur with four spines on internal margin. “Y” suture not very apparent. *Measurements* (n = 10): Body length 3.50 ± 0.22 ; head length 0.47 ± 0.06 , width across eyes 0.77 ± 0.04 ; interocular distance 0.44 ± 0.02 ; interocellar distance 0.30 ± 0.02 , postocular distance 0.05 ± 0.02 ; antennal segments: I 0.27 ± 0.02 , II 0.69 ± 0.04 , III 0.67 ± 0.02 , IV 0.68 ± 0.04 ; labial segments: I 0.57 ± 0.03 , II 0.51 ± 0.03 , III 0.41 ± 0.04 , IV 0.28 ± 0.04 ; pronotum length 0.53 ± 0.03 , width across humeral angles 1.10 ± 0.06 , width across anterior margin 0.61 ± 0.05 ; scutellum length 0.55 ± 0.03 , width 0.61 ± 0.05 ; hind leg: femur length 0.71 ± 0.05 , tibia length 1.09 ± 0.08 , tarsus length: I 0.33 ± 0.02 , II 0.24 ± 0.01 .

Adult.—Head and pronotal calli brownish red. Pronotum with well differentiated calli, posterior lobe and lateral expanded margins brownish yellow, with some brown

areas near base of pronotum. Most of legs and antenna pale yellow; distal half of antennal segment IV slightly darker. Dorsal surface of head with short silvery hairs. Posterior pronotal lobe with a pale yellow mesial line, not reaching posterior margin. Scutellum nearly black with white apex. Hemelytron brownish yellow; clavus with a dark brown area on each side of claval commissure; corium with a small brown macula at level of distal third of scutellum; internal angle of corium with a large dark brown macula that becomes narrow near its lateral margin; external apex of corium with a dark brown macula; membrane translucent. Abdominal venter reddish brown. Acetabula and posterior lobe of metapleuron white, with a few dark brown markings. Metathoracic scent gland auricle reddish orange. Labium slightly longer than metacoxae. Abdominal dorsum almost completely glabrous and venter covered with silvery hairs.

Male: Measurements (n = 10): Body length 3.6 ± 0.07 ; head length 0.45 ± 0.04 , width across eyes 0.71 ± 0.06 ; interocular distance 0.42 ± 0.03 ; interocellar distance 0.28 ± 0.02 ; postocular distance 0.05 ± 0 ; antennal segments: I 0.28 ± 0.02 , II 0.71 ± 0.06 , III 0.66 ± 0.04 , IV 0.72 ± 0.03 ; labial segments: I 0.52 ± 0.02 , II 0.53 ± 0.03 , III 0.37 ± 0.04 , IV 0.24 ± 0.01 ; pronotum length 0.63 ± 0.03 , width across humeral angles 1.12 ± 0.03 , width across anterior margin 0.54 ± 0.01 ; scutellum length 0.54 ± 0.03 , width 0.63 ± 0.02 ; hind leg: femur length 1.07 ± 0.05 , tibia length 1.27 ± 0.02 , tarsus length: I 0.38 ± 0.02 , II 0.1 ± 0 ; III 0.14 ± 0.01 .

Female: Measurements (n = 10): Body length 4.13 ± 0.2 ; head length 0.48 ± 0.04 , width across eyes 0.74 ± 0.04 ; interocular distance 0.44 ± 0.04 ; interocellar distance 0.31 ± 0.02 ; postocular distance 0.05 ± 0.01 ; antennal segments: I 0.29 ± 0.03 , II 0.73 ± 0.04 , III 0.70 ± 0.02 , IV 0.76 ± 0.05 ; labial segments: I 0.52 ± 0.03 , II 0.51 ± 0.04 , III 0.40 ± 0 , IV 0.29 ± 0.01 ; pronotum length 0.71 ± 0.05 , width across hu-

meral angles 1.32 ± 0.08 , width across anterior margin 0.59 ± 0.01 ; scutellum length 0.65 ± 0.02 , width 0.74 ± 0.03 ; hind leg: femur length 1.23 ± 0.03 , tibia length 1.55 ± 0.05 , tarsus length: I 0.44 ± 0.03 , II 0.10 ± 0.01 ; III 0.15 ± 0.02 .

Biology.—This species was not very abundant. It usually was present when *O. baranowskii* did not occur. In La Mancha this species was found from March to November. It was easily mistaken for *Ozophora baranowskii*, although it is smaller and it has a continuous dark brown macula through the hemelytra at the level of the claval commissure. It has been found feeding on raccoon excrement that contains fig seeds. It was slightly less active than *O. baranowskii*, and when disturbed it flies short distances. They were present on leaf litter of *Ficus cotinifolia*, and *F. trigonata*.

KEY TO FIFTH INSTAR NYMPHS

1. Dorsal surface clothed with numerous conspicuous erect hairs *O. concava*
- Dorsal surface glabrous or nearly so 2
2. Antennal segments III and IV unicolorous 3
- Antennal segment III dark brown, segment IV with a broad white annulus 4
3. Head dark brown; pronotum dark brown, usually with four round maculae near its base; femora and tibia unicolorous *O. baranowskii*
- Head dark brown, usually with a pair of white areas near its base; pronotum with four maculae near its base, but also with small irregular white maculae on anterior lobe; femora usually darker than rest of leg, and with a contrasting white annulus on distal ends *O. maculata*
4. Apex of mesothoracic wing pad dark brown; distal ends of femora and tibiae dark brown *O. consanguinea*
- Apex of mesothoracic wing pad pale yellow; femora and tibiae pale yellow *O. atropictoides*

DISCUSSION

This study is part of a larger project on the lygaeid fauna associated with figs in Mexico, and here we described five complete life cycles, including illustrations and taxonomic descriptions of all immature stages, host plants, and biology of *O. atropictoides*, *O. baranowskii*, *O. concava*, *O. consanguinea*, and *O. maculata*. The char-

acters used to separated the fifth instar nymphs are coloration of the head, thorax, abdomen, and antennae; the presence of hairs on the body surface; and by the size of different structures, such as width across eyes, size of antennal segments, and total body length.

Most of the fig host records for *Ozophora* are cited as *Ficus* sp. There are only four specific records, *F. religiosa* L. and *F. retusa* L., which are introduced species in the Neotropics, and *F. trigonata* L., a strangler fig with a wide distribution (Slater and Baranowski 1990). Rodriguez (1997) gave a few natural history notes for *O. baranowskii* and *O. maculata* and found them associated with *F. padifolia*. Here we included records for 12 species of *Ficus*, *F. aurea*, *F. colubrinae*, *F. cotinifolia*, *F. insipida*, *F. maxima*, *F. obtusifolia*, *F. perforata*, *F. pertusa*, *F. petenensis*, *F. tecolutensis*, *F. trigonata*, and *F. yoponensis*. We found that there is not much specificity on the species of figs with which the lygaeids are associated. They seem to be present on almost all the species of figs that are found in an area, and it depends on which species of figs are fruiting.

Microhabitat specificity seems to occur in all the species studied. *Ozophora baranowskii* and *O. maculata* inhabited the superficial layers of litter, although adults of *O. baranowskii* are sometimes found on the vegetation under fig trees, or on the fig trees, feeding on opened fruits or fallen seeds. Adults and nymphs of *O. atropictoides* also were found on the superficial layers of leaf litter, but usually on the more shaded areas. *Ozophora concava* was found on the leaf litter near the base of the tree, around buttresses or on aerial roots. *Ozophora consanguinea* also was found around the base of the tree, but also in crevices and tree forks of the trunk where leaf litter accumulated. *Ozophora baranowskii* was the first one to appear; they were found soon after trees started to drop fruits. *Ozophora consanguinea* was probably the last one to

leave the tree, feeding on old seeds that had accumulated in crevices and tree forks.

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